Bridge Inventory & Structural Recommendation Report
For
Bridge Demolition/Replacement Project

Structures: D-447 & 4D-149
SR-198; Spanish Fork Main Street, Fairground to Arrowhead Trail
Remove Structure 4D-149
Remove & Replace Structure D-447

Project Manager: Bill Townsend
Project Number: S-0198(11)12
PIN number: 5753
CID #:
FY: 2008

UDOT

Structures Division
Region 3

Prepared by
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January 2007

Reviewed by Structures Team: 2/1/2007
DM#: 56875

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CONCEPT REPORT SUMMARY

Scope of Project:

1. Purpose of Concept Report

This report presents a conceptual overview of a project to remove 2 bridges and replace them with one larger structure on SR-198 in Spanish Fork. It is intended to convey the need, scope, schedule, budget, and quality control process for the project.

2. Project Information

Region: 3 **Route No:** SR-198 **Date:** January 2007
Project Name: Bridge Demolition/Replacement on SR-198 **R.P.:** 11.561
Project Number: S-0198(11)12 **PIN**: 5753 **CID:**
Project Design: Bridge: UDOT Structures Division;
Roadway: Region 3 Preconstruction
Project Mgr: Bill Townsend

3. Bridge History & Deficiencies: (Summarized from Project Inventory Report):

Bridge Condition & Appraisal Ratings:

Bridge	Year Built	Suff. Rating	Deck	Super	Sub	Scour Critical	Deck Geometry
4D-149	1920	58.6	5	4	4	4	6
D-447	1940	90.2	7	6	6	8	9

Deficiencies to the bridges include but are not limited to:

Structure 4D-149 (From Latest Inspection Report 4/21/205):

- Wearing surface is in fair condition. The parapets have been rebuilt and look very good.
- The bases of the arch have heavy scalling and exposed heavily rusted rebar; this damage is caused by the sidewalk joints leaking.
- Riprap has been placed at the base of the abutments to minimize previous undermining of the footings and protect exposed piles.
- Riprap has also been placed on the slopes along the sides of the bridge to protect against erosion.

Structure D-447 (From Latest Inspection Report 4/21/205):

- New parapets have been installed. There is some cracking with light efflorescence on the bottom of the deck.
- The asphalt-wearing surface is in fair condition. The curbing is scalled and spalled. No exposed rebar. Some areas of salt saturation in the bottom side of the deck.
- The roller bearings are hard against the retainer bars in the extended position and have surface rusting.
- There is some spalling of beam diaphragm edges at the expansion joints.

- The abutments and wing walls have spalled areas of concrete with exposed rusting rebar with section loss.

4. Plan:

The structural portion of this project includes removing the existing bridge that currently carries the southbound to westbound (4D-149) free-right movement and replacing structure D-447 with a larger structure that will accommodate 2-12' thru-lanes in each direction, a 14' median, 12' SB right turn, 10' shoulders, 2' parapets, and 6' sidewalks.

Special consideration should be given to the historical significance of the existing bridge and wildlife access under the bridge.

5. Work Items to be Completed:

The scope of this project includes the following:

- Remove Existing Bridges 4D-149 & D-447
- Replace Existing Bridge D-447 (120' x 106')
- Miscellaneous Hydraulic Work
- Tie-in Roadway (Roadway Item)

6. Work Items to be Deferred:

The roadway designers will address roadway and safety items beyond what is related to the bridge replacement.

The hydraulic capacity of the channel needs to be coordinated with the geometric design of the bridge. A hydraulic analysis report will need to be created by the Hydraulics Division.

7. Design Exceptions:

No Design Exceptions are expected.

8. Maintenance Considerations:

Region 3 Maintenance Station 3426 should be included in the concept development.

9. Construction Considerations:

Construction phasing will likely be required for the bridge replacement. Public information services and coordination with local cities should be mandatory. Limitations of Operations, incentives, A+B bidding, Design-Build and Accelerated Bridge Construction (ABC) methods should be considered.

River flows and possible environmental impacts need to be considered throughout construction.

10. Risk Analysis: (None anticipated at this time)

The greatest risk is associated with traffic control and delays.

11. Development Process:

New or Major Reconstruction	x
Rehabilitation	
Preservation	

Schedule of Project:

Refer to the overall Project Schedule.

Budget of Project:

1. Funding Source: **State Funds**

2. Commission Approved Amount: **$ 5,000,000**

3. Cost Estimate: **$ 3,629,449**

Bridge Demolition/Reconstruction

	D-447 & 4D-149; SR-198; Spanish Fork Main St., Fairground to Arrowhead Trail				
	Item	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
	Structure Items				
	Remove Bridge	2	LUMP	$ 40,000.00	$ 80,000.00
1	Replace Structure D-447 (120' X 110')	13200	SF	$ 165.00	$ 2,178,000.00
3	Deck Protection System	17340	SF	$ 5.00	$ 86,700.00
4	Parapet Sealing	340	FT	$ 3.00	$ 1,020.00
2	Miscellaneous Hydraulics	1	LUMP	$ 100,000.00	$ 100,000.00
	Innovative Contracting	1	LUMP	$ 250,000.00	$ 250,000.00
	Structure Subtotal				**$ 2,445,720.00**
	Roadway Items				
	Roadway Items needed to tie bridge into roadway, approaches, etc.				Included in Roadway
	Traffic Control				Included in Roadway
	Mobilization				Included in Roadway
	MOT				Included in Roadway
	Public Information Services				Included in Roadway
	Subtotal				**$ 2,445,720.00**
	20% PE/CE				$ 489,144.00
	20% Contigency				$ 489,144.00
	Project Total				**$ 3,424,008.00**
	Inflation Rate 6% over 1 Year				**$ 3,629,448.48**

1. Assumed L=120', W=110' (4-12' Travel lanes, 12' Turn Lane, 14' Median, 10' Shoulders, 6' Sidewalks & 2' Parapets. Cost includes the construction of approach/sleeper slabs.
2. Hydraulic Division will need to verify the adequacy of the waterway opening, channel alignment & bank protection for the new structure.
3. 25' approach slabs on either side.
4. Assume parapets run the full length of the approach slabs.

LOCATION MAP